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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/742,314	12/21/2000	Philip W. Diodato	8-35-22	5870

7590 07/15/2002

Docket Administrator (Room 3C-512)
Lucent Technologies Inc.
600 Mountain Avenue
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Murray Hill, NJ 07974-0636

EXAMINER

NGUYEN, JOSEPH H

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 07/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/742,314

Applicant(s)

DIODATO ET AL.

Examiner

Joseph Nguyen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanigawa.

Regarding claim 1, Tanigawa discloses on figure 3 an integrated circuit comprising a semiconductor substrate 1 including semiconductor devices; a first wiring layer 6 having an associated thickness being located over the substrate 1 and having interconnect wire 7 embedded therein; a second wiring layer 10 having an associated thickness being located on the first wiring layer and having interconnect wire 9 embedded therein; and a capacitor having a first metal based charge storage electrode 11, a second metal based charge electrode 13, and a dielectric layer 12 interposed between the charge storage electrodes, the charge storage electrodes 1, 13 extending through the thickness of the second wiring layer 10 and at least part of the first wiring layer 6.

Regarding claim 2, Tanigawa discloses on figure 3 the dielectric layer 12 comprises of Ta₂O₅.

Regarding claim 3, Tanigawa discloses on figure 3 a first region of the substrate 1 includes dynamic random access memory cells; a second region of the substrate

includes logic circuit and is physically separate from the first region; and the capacitor is located in a portion of the wiring layers located over the first region of the substrate.

Regarding claim 4, Tanigawa discloses on figure 3 the capacitor is a functional portion of one of the random access memory cells.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanigawa as applied to claim 1 above, and further in view of Ma et al.

Regarding claim 5, Tanigawa discloses on figure 3 substantially all the structure set forth in the claimed invention except a third wiring layer being located on the second wiring layer and having a metal based interconnect wire. However, Ma et al discloses on figure 1 a third wiring layer 58 being located on the second wiring layer 38 and having metal based interconnect wire 60 embedded therein, the first charge storage electrode 30 of the capacitor being in physical contact with a portion of the interconnect wire 60 of the third layer. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Tanigawa by having a third wiring layer being located on the second wiring layer and having a metal

based interconnect wire for the purpose of increasing the effectiveness of the electrical interconnect in an integrated circuit.

Regarding claims 6- 8, Tanigawa discloses on figure 3 substantially all the structure set forth in the claimed invention except a tungsten plug being located between the second charge storage electrode and a portion of the substrate. However, Ma et al discloses on figure 1 a tungsten plug 24 being located between the second charge storage electrode 26 and a portion of the substrate 20. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Tanigawa by having a tungsten plug being located between the second charge storage electrode and a portion of the substrate for the purpose of improving the electrical connection in a memory cell.

Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (703) 308-1269. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 308-7382 for regular communications. Any inquiry of a general nature or relating to the status of this

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application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JN

July 8, 2002

A handwritten signature in black ink, appearing to be 'Eddie Lee', with a large, sweeping loop at the top.

EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800